Title	Synergetic implementation of knowledge and numerical data in geophysical fluid data server
Author(s)	Tomobayashi, Akinori
Citation	Sustainable humanosphere : bulletin of Research Institute for Sustainable Humanosphere Kyoto University (2009), 5: 39-39
Issue Date	2009-09-10
URL	http://hdl.handle.net/2433/182151
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

Synergetic implementation of knowledge and numerical data in geophysical fluid data server

**(Graduate School of Informatics,
Laboratory of Atmospheric Sensing and Diagnosis, RISH, Kyoto University)**

Akinori Tomobayashi

The amount of information on the Earth's atmosphere and ocean has increased greatly by recent dense observations with high sampling. The scale of a numerical simulation is also growing rapidly. So, digital data on "geophysical fluids" are explosively increasing. As such data are mostly recorded in a binary format, the raw digital data are not easily readable by a user. Therefore, the users commonly download them, analyze and visualize them on their own computers. However, the greatness of data size sometimes hinders the effective use of data. Another obstacle is that a user has to prepare software infrastructure to handle the data in variety of different formats.

To solve the problems, our group develops a software tool called "Gfdnavi", with which we have constructed a data server having search, analysis and visualization capability. Then, any user can analyze and visualize data on this server side, and download the results only. Thus, the problem about data transfer size is solved. In this study, we newly add a function to write a document based on knowledge obtained with a Gfdnavi server. The documents are stored on the server for synergetic use with numerical data. This feature enhances capability of the data-server in effective and intelligent use of both digital data and knowledge, and this is superior to other existing data-server tools.

For example, one can find the numerical data and analysis procedures used to create a knowledge document, so one can reproduce, verify, or even extend the analysis. Users can also search a knowledge document from numerical data, and find the knowledge obtained from the data or to understand through an example on how to handle the data. This system also allows the user to add a comment to the knowledge document, which is useful in publishing them to a wide community. In order to make the knowledge documents widely available on Gfdnavi servers, we introduce a new login system, called OpenID, as an external authentication system. We hope the feature and method proposed in this study will be applicable to other fields of science.